

PROGRESS REPORT #4

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CR - 130528

TITLE: To Develop a Land Use-Peak Runoff Classification System for Highway Engineering Purposes.

PROBLEMS:

1. Color composites requested nearly three months ago have not been received at this writing. For visual analysis procedures, good quality simulated CIR products made from MSS bands 4, 5 and 7 are considered to be essential for the identification of the land use types included in the tentative classification system contained in the original proposal.
2. In desperation, the writer ordered an MSS Band 4, 5 and 7 color composite from a commercial concern in Maryland. The composite, produced from Standard B/W 70 mm positive transparencies, was unsatisfactory. In fact, less information could be gleaned from this fuzzy color transparency than could be extracted from Standard ERTS B/W positive transparencies. For forest type differentiation, Band 5 was superior to the color composite. For identifying different types of water storage areas, Bands 6 or 7 were superior to the color composite.

ACCOMPLISHMENTS:

1. U-2 Vinten and RC 10 photography was obtained on 20 September. On the same day CIR coverage at a scale of 1:125,000 was taken by a local commercial concern. These coverages were taken during the coloration season of swamp hardwoods located in the Central and Northern regions of the State. On that particular date, the fall coloration of upland hardwoods was just starting in the extreme northern part of the State. The yellow pattern of the swamp hardwoods (red maple, ash, elm) was very easy to delineate because of the high contrast with the magenta pattern of the adjacent upland

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hardwoods. The perimeters of swamp hardwood sites, which are effective water storage areas, are very difficult to delineate accurately in an undulating or gently rolling terrain where the surrounding environs are covered by upland hardwood forests. If good quality simulated CIR composites could be produced from ERTS imagery taken on 20 September, the writer is of the opinion that the swamp hardwood water storage areas could be accurately delineated in ERTS imagery covering an area of several thousand square miles in the Central and Northern Regions of the State. Thematic maps showing the distribution of this forest type would be very useful for other disciplinary studies including forest inventories, wildlife habitat research projects and engineering soils studies relating to frost action and microclimate.

PLANNED FOR NEXT PERIOD:

Imagery taken during the spring break up is considered to be the best seasonal coverage for hydrological studies, especially for mapping water storage areas. Runoff ground truth will be obtained at over 50 drainage structures along a 150-mile section of the Interstate coincident with all orbits and underflights during the breakup period. The dates of peak flows will vary considerably in different climatic zones and with local weather conditions. It is probable that peak flows will occur between 15 March to 15 April, during which time-slot it is hoped that at least one orbit will be relatively cloud free.